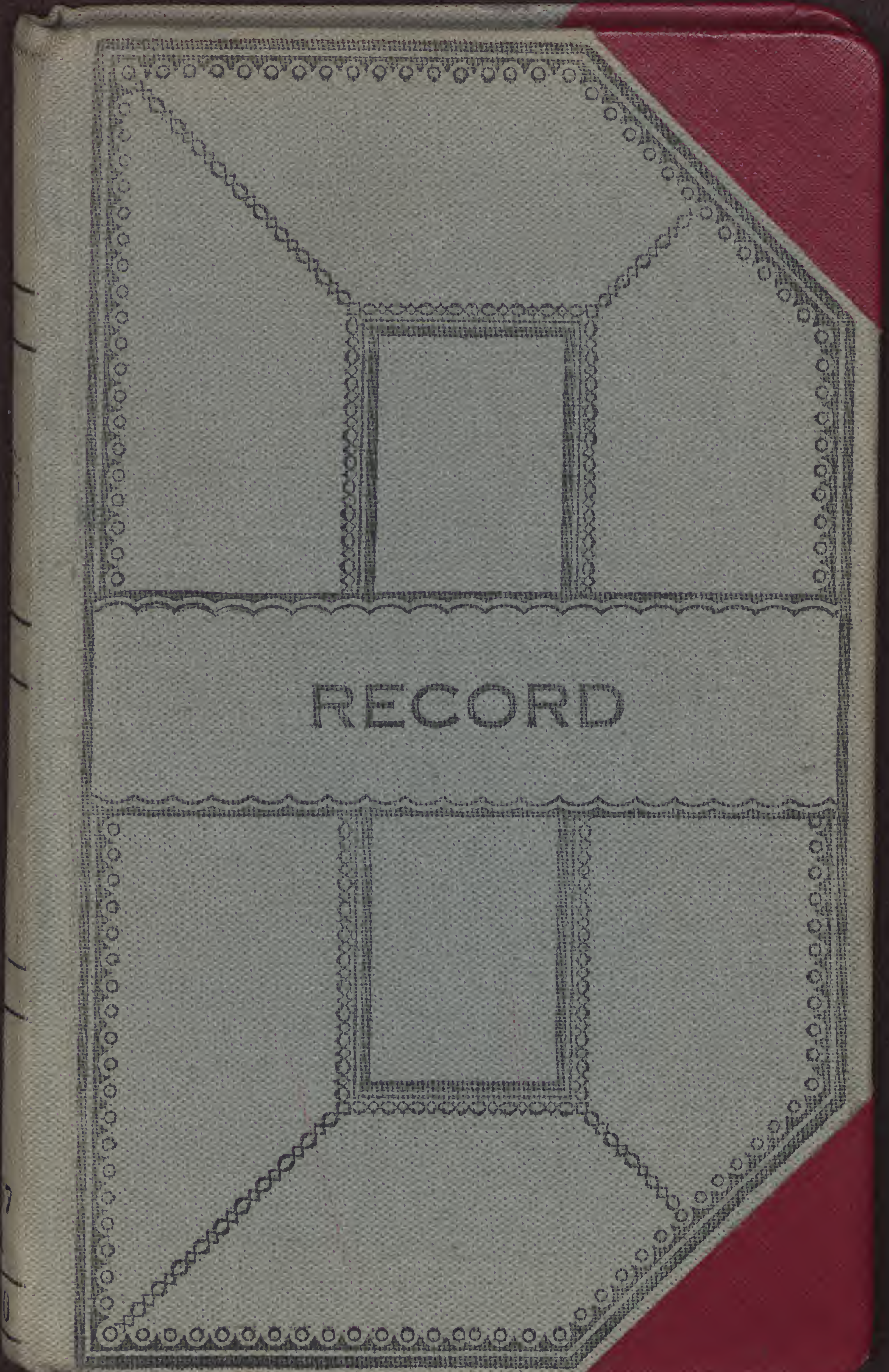

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Collection and Field Note Book

No. 75

(Dec. 13, 1964 -- June 13, 1964)

(45939 -- 46189)

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1964 Brazil

Dec. 17 - Trip by air Rio to Sao Paulo - Constellation at 10.

Small areas of mangrove around bay near airport. Flat areas and ~~some~~ of smaller hills completely built up - congestion of small houses on these hills incredible. Some other small hills grassy or with obviously planted widely separated trees. Small bare granite domes. Steeper slopes in mountains back of Rio with excellent forest - white Cecropia scattered through it.

Restinga on other side is more built up than 2 years ago on ~~side toward~~ north end but still pretty undisturbed southward.

Farther south a very long barrier bar encloses an enormous lagoon-bay. It becomes narrower and narrower till it is a thread of sand with a line of shrubs, then no shrubs. Then it widens again and

1964 Brazil

soon becomes a narrow triangle of complex beach ridges, open scrub vegetation. This has an arcuate hooked spit running into the bay and enclosing a smaller bay. White sand beaches.

Southward this bay gives way to a complex of high islands. This continues for some distance along the coast.

Course is out over the sea, too far from coast to see any detail. Much Cumulus and strato-cumulus cloudiness.

More small high islands.

Then no visibility at all for a long way.

Dec. 15 - São Paulo -

On hedges and shrubs in the city is a conspicuous Cuscuta, forming orange masses and festoons. It is said to be highly prized as an ornamental, to be deliberately planted, and planting material even sold. It is said to parasitize various hosts, but is commonly found on Ligustrum hedges. Is not aggressive or at all a pest.

Tibouchina sp. of T. splendens group is a common street tree here, in full bloom - trees densely covered with big rose purple flowers fading to whitish. Different Tibouchina species are used as ornamentals, many of them flowering at different times. A dark purple one, cf. T. semidecandra also in flower, but rare.

Ligustrum japonicum trees common along streets - also Tipuana tipu and Caesalpinia coriaria (?).

1964 Brazil

Labels typed 45939- 45994b

Dec. 13 - São Paulo
planted in botanical garden
45939 Acalypha cf. godseffiana
3 commonly seen in city.

Dec. 19 - São Paulo
weed in botanical garden.
3 40 ~~[illegible]~~(rub.) Diodia?
common

1 41 Richardia brasiliensis Gomes det. R.L.
common, in fresh earth
4 42 Spermacoce
common
2 43 Centella asiatica
common in grassy places
4 44 Richardia brasiliensis Gomes det. R.L.
common
1 45 Oxalis corniculata L. (sensu stricto)
in edge of lawn

same - ~~[illegible]~~ planted
2 46
1 47 Acalypha
1 48 Acalypha

Est. de São Paulo

shrub 3 m. tall, rather densely branched, leaves dark maroon-bronze with bright pink margins; bracts red.

prostrate; corollas 4-merous, broadly funnelform or campanulate, lavender, ~~[illegible]~~
— falling very readily.

Oliver, 1976 prostrate; corollas
— white 5-6 merous.
~~[illegible]~~ erect, corolla white.

rhizomes on surface of ground.

Oliver, 1976 prostrate; corollas
— white 5-6 merous.
flowers yellow, branches ascending to erect.

shrub with elongate branches,
— flowers white, odorless.
shrub, leaves reddish green
— with pink margins.
shrub, leaves reddish green with pink margins.

1944 Brazil

45949 Acalypha "mosaica"
2

1 50 Acalypha

1 51 Pentas lanceolata

Dec. 19 São Vicente, just south of Santos
planted as ornamental around ~~[illegible]~~ dwellings on flat ground several blocks back of beach

2 52 Acalypha

1 53 Acalypha

1 54 Acalypha

3 55 Acalypha

1 56 Acalypha

Est. de São Paulo

shrub, leaves strongly dimorphic, patchy red and green, various shades in mosaic.

shrub, leaves green but patchy with yellow and pinkish.

shrub to 1.5 m. tall, flowers pink within deep crimson without.

shrub 3-4 m. tall, leaves dark reddish green with pink margins. stigmas red.

shrub 3 m. tall, leaves dark reddish green with irregular paler patches, usually bounded by veins; stigmas red.

shrub 2 m. tall. leaves green with patches and sections of paler green or almost white, stigmas greenish, scarcely pink.

shrub 1.5 m. tall, leaves dark reddish green, narrow pink margins; bracts partly pink, stigmas red.

shrub, leaves green, blotched with paler green and pink, bracts green, stigmas pink.

1964 Brazil

Dec. 19 - by auto from São Paulo to Santos -

Range of low hills between São Paulo and the coast is densely wooded with a rather small forest, said to be mainly Tibouchina.

A few Araucaria angustifolia ~~[illegible]~~ very near São Paulo. Said to be native. Said to be a belt of them across the state.

Factories are encroaching on these wooded hills along a super-highway that runs from S.P. to Santos. Large dams have backed up water to fill valleys.

Where the highway goes over the edge of the escarpment the fog is so thick that little can be seen. Dense montane rain forest clothes the escarpment.

At the foot much of the land is occupied by banana plantations. Some thickets.

The flat land near the beach, really on an island separated from the mainland by a narrow channel, is covered by city - Santos to the north, São Vicente to south. A broad gray sand beach in front.

São Paulo

Small high islands just off coast. São Vicente Island has been connected with mainland by causeway. It is 100 m or so high, was wooded but is largely built up now, some woods left.

The coast to south, so far as can be seen, is steep and rocky. That off the island is cliffs. The rock, when fresh enough to be recognized, looks like granite, with some thin white veins in it.

Weedy areas have Paspalum conjugatum, Bidens pilosa, etc. Some Gleichenia.

Dec. 20 - Ilha do Santo Amaro -
~~Guarujá~~ Mun. Guarujá, nr. Santos
high granite island
with some flat coastal land -
this either built up (Guarujá)
or in banana fields. The
hills still largely covered
by native forest.

In Guarujá the principal
street tree is Terminalia catappa.

Beyond Guarujá to east is
a broad sand flat with a
wide beach. The flat
has some native scrubby
vegetation, very poor except
at far end, where it
forms a low forest. There
also more hills, partly
wooded, partly cleared.
Beyond these, flats are
partly cleared being sub-
divided. Remaining forest
badly beaten up.

Then more hills, mostly
wooded.

Small inlet lined by
low mangrove (bet. km. 6 + 7).
A few small farms &
fishermen's huts. Flats
mostly with low forest.
Some clumps bamboo.
Low spots with Typha.

Km 13 - some mangrove but
much more on mainland

across the narrow channel.
Road follows inner
shore, bet. mangrove
and hills. Forest above
road rather degraded.

Collected at inner
edge of mangrove swamp
at foot of hill bet.
km. 18 + 19. Low scrub
forest. and low mangrove
with Cladium. weedy
sandy roadside.
about 2km from Bertioga

Where there is flat
ground bet. mangrove & hills,
plantations of Musa nana.
On lower slopes of hills forest
tends to be degraded.
Hibiscus tiliaceus in edges
of swamps. Hedychium
coronarium at foot of hill.

Clusia at base of hill
bet. km. 16 + 17.
Also seen in edge of mangrove.

photos (c. + b&w) about km. 17.
also at km 9 6

1944 Brazil

Dec. 20 – São Vicente, ~~[illegible]~~ s.w. Santos

45957 Acalypha
1 planted around dwelling

Dec. 20 – Ilha de Santo Amaro
~~n.e. of Santos~~
km. 17 on highway from Guarujá
to Beriogá! n.e. of Santos along ~~south~~ north coast.

8 58 Clusia
comm. at inner edge of mangrove swamp

Dec. 20 same, bet. km. 18 and 19.

on granite rock at base
of hill, just above mangrove swamp.

5 59 Clusia
occasional in thickets

5 60 Allamanda
very common in thickets and
open spots

3 61 Dicranopteris pectinata (Willd.) Underw. det Lellinger, 1978
very common in edges of thickets.

same – in wet sandy
roadside ditch

2 62 (comb.) Barrosoa betoniciforme (DC.) K. & R.
1 63 Sauvagesia det. H.E. Robinson, 1974

Estado de São Paulo

1 m. shrub 1.5 m. tall, leaves
red; staminate ament pendent.

Tree about 5 m. tall, growing in
ground; flowers with white
petals, very dark purple calyx and buds,
leaves pale beneath.

4 m

Tree about 5 m. tall, growing
~~in~~ ground; flowers with
white petals, very dark
purple calyx and buds; leaves
pale beneath.

scrambling vine,
corolla bright yellow.

rhizome horizontal slightly
buried, fronds forming dense
tangles.

2 m

disk ~~[illegible]~~ reddish purple.
flowers white

Dec. 20 Praia Grande
s.w. of Sao Vicente –

Range of hills, with a broad flat between it and a lagoon in front of the cordillera de la Costa.

Flat parte marshy part thickets, some houses.

Then town of Praia Grande on the flat at the end of the hills, extending some distance, gradually thinning out but with several clumps of apartments.

Beyond the heavily settled part the arrangement is –

1 a broad flat beach without vegetation.

2 a belt of small dunes held by grass.

3 a belt of irregular flat held by an irregular, partly closed vegetation of prostrate or semi-prostrate herbs.

Then (4) a belt of dunes bet. 2 & 3 m. with herbs on face, shrubs on top – closed.

~~B~~ 5 Broad flat with irregular mixture of low scrub and herbs, closed.

Marshy spots in this with Typha, Andropogon glomeratus.

This is very wide, ± 1 km.

Then a broad belt of

low thick forest, rather small-~~lf~~ leafed. Wet white-sand soil with a black organic layer on top.

Northward along new road, near large estuary, the vegetation is low mangroves.

This swamp is extensive and cut by several large tidal streams.

Abrupt mts. come down to it are of a dark massive gneiss banded with white. Deep red weathering on surface.

From the road up the escarpment it is clear that behind Santos and San Vicente there is an enormous mangrove swamp. Large tidal channels wind through it and form a network.

1964 Brazil

same - in edge of mangrove swamp

45964 (bign.)
4
occasional

7 65 Stigmatophyllon
common on sandy banks

1 66 Wedelia trilobata (L.) Hitchc.
common on sandy banks

1 67 Spermacoce
rare on [illegible] wet roadside

1 68 Scoparia dulcis
occasional on sandy banks

det. Wurdack 1978
1 69 Polygala paniculata L. forma leucaptera
occasional on wet sandy bank

3 70 Tibouchina holosericea
common generally

Est. de Sao Paulo

small tree, 5 m. tall; almost leafless; flowers white with yellow throat

prostrate vine, petals bright yellow.

heads deep yellow. plant sub-prostrate.

flowers white

Blake
~~fls~~ roots with wintergreen odor; flowers white.

erect shrub, petals deep purple, showy.

1964 Brazil

Dec. 20 Praia Grande, about 10 km. s.w. of São Vicente, (s.w. of Santos) on wide sandy flat with small dunes.

45971 grass
3 locally common

2 72 Hydrocotyle
common

5 73 Diodia
common

4 74 Oxypetalum tomentosum
common

3 75 Diodia
very common

2 76 Richardia ~~humifusa~~ brasiliensis Gomes det R.L. Oliver, 1986
rare

2 77 Centella repanda
common on slopes of dunes

2 78 Plantago catharinea Decne.
locally common

1 79 Cenchrus
occasional

3 80 Paspalum
common

5 81 Cassia flexuosa L.
common

4 82 Ambrosia cf. hispida
very local

3 83 Rumora adiantiformis (Forst.) Ching det. Le inger, 1978
very common on dunes and in very low scrub

2 84 Waltheria
occasional

45980a Stenotaphrum secundatum — prostrate

culms spreading,
— panicles bluish
rhizomes buried in
— sand, white, succulent.
flowers pale lavender,
4 merous.
— prostrate, lactiferous; flowers
greenish white.
— extensive, mat-forming,
corollas very pale lavender,
— falling easily.
prostrate

rhizomes buried or
exposed, fleshy.

culms spreading.

prostrate, flowers
dull yellow.
— forming a dense low
spreading clump
— rhizome slightly
buried, horizontal,
— fronds erect, leathery.
very prostrate, elongate; flowers yellow.

1964 Brazil

49985
2 in edge of scrub on dunes
3 86 Cordia verbenacea DC.
common

3 87 Lantana nivea
common in low scrub on dunes
2 88 Inga sellowiana Benth.
rare in scrub on dunes
3 89 Vernonia
common in scrub on dunes
2 90 Stenotaphrum secundatum
very common
2 91 Ischaemum
common locally
2 92 (Lab.)
rare
4 93 Gnaphalium cf. obtusifolium
occasional
3 94 (euph.)
locally common on outer slopes of dunes

Dec. 19 - Instituto de Botanica
São Paulo
weed in botanical garden
1 94a (scroph.)

1 94b Axonopus

Est. de São Paulo

twining vine.

shrub, ascending
to prostrate (where exposed)
corollas white.
flowers white; fruit purple;
low shrub.
shrub; stamens white.

culms erect; leaves
glaucous.
culms erect.

flowers purple.

prostrate, lactiferous.

prostrate

prostrate.

1964 Virginia

Labels typed 45995-45997

Dec. 25 - Arlington Blvd.
s.w. of Merrifield

in patch of Pinus virginiana forest

45995 Mitchella repens L.
1 common

2 96 Polystichum acrostichoides
occasional

1 97 Chimaphila maculata
common

Patch of pine woods with trees to 20-35 cm dbh. perhaps 25 m. tall, tangled with Lonicera japonica.

Dec. 25 - Sleepy Hollow

~~8 98 Smilax rotundifolia~~

8 98 Smilax rotundifolia L.
label done occasional in second-growth mixed pine and Liquidambar

---

45995 - 97

Fairfax Co. blanks

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ens,
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r
nearly.

in
i,

45995 — 97

Fairfax Co. blanks

✓

1964 Virginia Fairfax County

Labels typed 45995- 45997

Dec. 25 – Arlington Blvd. s.w. of Merrifield

in patch of Pinus virginiana forest

45995 Mitchella repens L. prostrate; fruit scarlet.
1 common

2 96 Polystichum acrostichoides fronds prostrate, radiating from a short, thick, erect rhizome.
occasional

1 97 Chimaphila maculata leaves dull dark green, ~~with~~ pale along veins.
common

Patch of pine woods with trees to 20-35 cm dbh. perhaps 25 m. tall, tangled with Lonicera japonica.

Seedling Ilex opaca; plenty of Mitchella repens, Chimaphila maculata, some Polystichum.
This wood will likely disappear, as a large building is being built nearby.

Dec. 25 - Sleepy Hollow

~~8 98 Smilax rotundifolia~~

8 98 Smilax rotundifolia L. stems green, forming a dense tangle, climbing in trees, basal parts prickly; fruit blue.
label done
occasional in second-growth mixed pine and Liquidambar forest.

1965 Md. to La & Texas

rt. side, Convair 880

Jan. 26 – air trip, jet Friendship airport to New Orleans & Houston.

Md. – except around airport, fully 90% in cult. or pasture, small patches of forest.

Potomac R. about Seneca – Point of rocks in distance –

Bull Run Mts. & Catoctins wooded. Blue Ridge, also, but 80–90% of land on this side and bet. them cult. & pasture. Slight traces of snow on ground, increasing toward Front Royal. Shenandoah Valley mostly cult. north of Front Royal, but just north of Massanutten Mts, an area of possibly 60% cult.

Page Valley less than 60% cult. Valley w. of Massanutten mostly cult.

Both e. & w. ridges of Massanutten are double-topped. South of Fort V. proper are 4 well separated ridges, actually 5 but 4 in any one transect. 4 again, irregularly, south of Newfound Gap. Then 3. then 4 again. Shenandoah Valley west of Massanutten at

least 90%–95% cult. less southward.

Crossed Massanutten near s. end. Shenandoah V. cult. well over 60% as far south as course. West of this the mountains and the Valley and Ridge Province is 90% or mostly more densely forested. Locally cult in valley bottoms but until well to south where valleys become broader the % of cultivation and pasture does not approach 10%.

The piedmont area to southwest of this (Cumberland Plateau?) is probably 60% cult. and pasture, possibly less, with areas of scrubby wood possibly pastured. Southward the cult. area rapidly becomes less, down to perhaps 20–30%. and this extends far to the west.

Large river cuts a winding path through mountains from west (~~French Broad~~?)(~~Roanoke~~? (new?))

North and south of this for a distance west of mts. perhaps 30% open. West of this perhaps 10%.

Course follows trend of Mts. about 3 ridges east of

1965 Va. to Texas.

western mountain front.

Second ridge from west remarkably straight and even for a long way. Then a wind gap. West of mts. still a partly cult. strip incl. a small city (Johnson City??), west of this a broad wooded area, as far west as visibility permits.

Cloudiness increasing.

Mts. spread out some, broad valleys are cult. and pastured, ridges wooded, perhaps 50%-50%. in a belt west of which mostly wooded.

This belt merges with the predominantly cult. belt west of mts. and e of wooded Cumberland Plateau (?).

Visibility except just west of course poor. Along course mt-ridges wooded, valleys clear.

Strip of karst between western 2 or 3 ridges and course. Mostly wooded, as are ridges and ridge along course. Strip of largely open land west of mts.

(about 1 hour after takeoff)

Karst broadens somewhat.

Visibility very poor.

North Carolina?

Large karst area, no very pronounced ridges west of it. West of karst a belt of perhaps 75% cult. land, 90%± forest west of this.

Karst area becomes more gentle and 20-40% cult. Large city on a large river, dammed in mts. Asheville?

Many mountain ridges west of it, with very large ones, Smokies? in distance. wooded Area this side of Smokies 20-30% open. River Valley bet. this and course 75% open. Prominent ridges along + just w. of course wooded.

River valley trending along course becomes more and more karstic + more wooded, perhaps 50%.

Entire belt bet. course and Smokies perhaps 40-50% open, becoming less so southward.

The big river along course apparently flows southwestward and is dammed to form a very large and very irregular reservoir with a large drawdown.

Another large reservoir 1-2 valleys to west. Generally about 40% cleared, overall— ridges wooded, valleys mostly open.

Still another reservoir more to west.

Along course a ridge cut by gaps into short ridges, with an isolated higher rocky-topped segment to west of it. Many long low more or less irregular (because of gaps) but straight ridges to west of course, east of large reservoir.

A very large city, Atlanta? spilling into many valleys and stretching as subdivision along a super-highway for a long distance along course.

Another large, but not as large, city beyond a reservoir to west.

A large muddy reservoir along course, a blue one to west, e. of city. Country between 65%± open. 80%+ wooded west of blue reservoir.

A mt. being cut away in this.

2 large towns along meandering large river below muddy reservoir just w. of course. River swings west, is dammed and very wide – perhaps the Tennessee? Along course 75% open, westward perhaps 25-30% open, both sides of large dammed river. Very regular ridge pattern

East of this river, at very slight angle converging with course. This side of very large complicated reservoir on main river perhaps 40-50% open. locally more or less. below big reservoir, too. West of it more wooded but not usually 80%.

Then, both sides of river perhaps 20% open, more along river, less away from it. Large tributary enters from east, cutting directly across the ridge at rt angle. Below this perhaps 25-30% open.

Then main river swings closer to course and dammed to form a large reservoir with a large ~~[illegible]~~ spread-out city at its lower end. (just over 1½ hours out.) ~~Birmingham?~~

Strong, wooded ridge system just west of city, river winds through it - dammed. Narrow strip of almost clear land in valley to west of this ridge system, then a broad strip of wooded mts. and reservoirs.

Country just west of course about 40-50% open. West of this very wooded. Sharp ridges

swing east across course.
Main river follows
course a bit to west. Wooded
mts. west of it.
Country bet. course and
mts. varying from 10 to 70%
clear, average about 50%
becoming much more clear
to south, both sides of large
reservoir. Generally about 75%
clear. Main river has
been bet. larger but is
flooded and various
tributaries are drowned.
Reservoir gets very large
Country perhaps 50% wooded.
Reservoir larger and more
complicated, muddy in main
part, blue in tributaries.
River swings off to west.
Country perhaps 75% clear
A few wooded ridges, still
but mostly piedmont-like
terrain. Large reservoir
in distance ~~ff~~ to west,
stretching west. At least
75% clear. Course follows
a couple of low ridges,
these gradually disappear.
Country becomes more wooded
perhaps 50%, locally more, locally less.
Then perhaps 60% wooded,
complicated reservoir to
west.

(Approaching Birmingham
acc. announcement)
Country perhaps 75% wooded
more so southward.
Drainage pattern very
complex but relief low.
Ravine deciduous forest.
Higher areas evergreen.
Perhaps 90% wooded, vast
area. Some areas less wooded,
but not very extensive.
Becomes perhaps 75-80%.
then perhaps 60%.
then perhaps 25-30% wooded.
Much of this looks like range
land. Broad strips of wood,
vague large checkerboard
in clear strips, which predominate.
Then 80-90% wooded, mixed
deciduous & evergreen.
becoming gradually
less wooded to perhaps 60%
Then to 40-50%, to 60%-50%
to 40%-50% Very flat country.
At about 2 hrs. 20 min. curved left a bit.
Country about 60-70% wooded.
gradually less to perhaps 30-40%.
for some distance.
Then perhaps 60-70% wooded
esp. bottom-land along winding
rivers. Many oxbow lakes
along these. Bottom-land forest
deciduous, that away from rivers
mostly evergreen. Small city.

1945 Mississippi – Louisiana

Approaching New Orleans – perhaps 60% wooded land, becoming less. Much even pine-land; areas of grass. Lake Pontchartrain ahead, low deciduous forest mixed with pine and grass. Perhaps 20% cult. (Lake.) New Orleans 2 hours 40 min. elapsed time.

Deciduous forest and ~~[illegible]~~ truck garden land around city. Much deciduous swamp across the river, with areas of open water.

Left N.O.

Vast area of deciduous swamp south and forest of two lakes – Pontchartrain and Maurepas. Tidal channels, ditches.

On north, this fades into land about 60% cleared and cultivated – westward the cultivation is in places very intensive, especially a band along both sides of Mississippi R.

Bars or flats in river on ~~convex~~ concave side of meander (convex side of bank) are slightly vegetated.

West of this large area of deciduous swamp forest with considerable agriculture to the north but none along course.

Louisiana – Texas

That to north associated with rivers. West of the vast area of swamp, ponds, watercourses, with discernible patterns mostly deciduous.

West of this large patches of cultivation, then almost 100% cultivation for a short distance, then patches of swamp and ponds, locally in otherwise cultivated landscape.

A fair sized city (Beaumont?)

West of this 100% cultivation except for many tiny circular ponds. Many of the patches are green, many tawny or black.

A town along highway, somewhat strips of bottomland forest along streams north and west of this, these mostly trending southwest, in an otherwise completely cultivated landscape. An especially large one of these has the central zone deciduous, peripheral parts evergreen. Another larger parallel one same.

West of this a large town.

More wooded country – cult. mosaic far to north.

West of town cultivation along course, much forest to north, mixed with large cult. patches. perhaps 60% forest.

1965 Texas

Then a s.w. trending riverbed with broad belt of deciduous forest, small patches of evergreen passing a small city directly on course. Very noteworthy tight meanders at city.

Course turned somewhat sharply northwestward at this city. Cultivation much less here – perhaps 5-10% cult. 30-40% forest 50-60% grassland. % forest increases westward largely but not all, evergreen. Then a broad band of deciduous forest along a meandering small river transverse to course. Then mixed ~~[illegible]~~ and evergreen forest 90%, with oil wells. Some patches of grass, but 80% forest or more, mosaic of evergreen and deciduous in mixed forest matrix.

Some cleared land and some uniform evergreen, perhaps 20% clearing. Broad deciduous river-bottom land, many old meanders showing in narrow complex bands of evergreen and deciduous forest, west of river.

Texas

Railroad, towns, oil fields transverse to course.

80-90% forest, some grass. Then solid mixed or fine mosaic forest for a considerable distance becoming more deciduous westward but still mixed – practically 100% forest, except for roads.

Then large clearings locally.

Circling to approach Houston – forest with some large clearings as far as one can see to north, n.w., west

Some cultivation n.e. of ~~[illegible]~~ Houston, also large areas of mixed or mostly deciduous forest. Meandering river in deciduous bottomland forest. An area with a great number of ponds (artificial). More cultivation – large area. Many small round bright patches – fire ant nests?

Bands of forest and cultivation.

Lagoon or flooded area to west, surrounded by wide forest zone. Large mosaic of clear and forest land south of lagoon and to west.

Large grassland area with oil

refineries. Residency areas.
Then large marshy grassland, small ponds. Local residential subdivisions. Some agricultural land mixed with grassland, around airport.

Feb. 21 — just east of east end of Woodrow Wilson Bridge, east of clover-leaf and south of Beltway
Large area of forest, mostly open deciduous forest with a few pines and red cedars. Some areas of the forest closed or nearly so. The open areas have a dense tall ~~under~~ shrub layer, this becoming thin where the tree layer is denser. The open part characterized, at least near the highway, by many broken trees, appearing dead or partly so. Not obvious what is cause of this, but it may be the blasting from highway construction, or ponding of water table by construction of the highway to Washington along river.

1965 Virginia

March 6 – Alexander Berger Sanctuary

Road along creek. – Corydalis flava not in flower yet. Barbarea vulgaris rosettes. Cardamine abundant. Lonicera japonica still with some leaves. Galium triflorum small sterile plants. Liquidambar fruits newly fallen. Ailanthus with dried fruits.

Flood plain meadow and beaver pond. – Much water in wooded area between pond and meadow, running into pond from this wet ground. Water running from pond through opening in beaver dam into flooded ground below dam. Water here only a few inches below that in pond.

Birds abundant. Bruce saw herring gull, ring-billed gulls, Cedar waxwings, Phoebe,

Spottsylvania Co.

rusty blackbirds, red-wing blackbirds, gold finches.

Glecoma hederacea abundant in wooded area, dull green.

Labels typed 45999-46006

1965 Virginia

March 6 - Alexander Berger Sanctuary. Rappahannock River 5 mi. below Fredericksburg in edge of woods on flood plain

45999 Claytonia virginiana L.
rare

1

46000 Ulmus americana L.
occasional

4

5 01 Alnus serrulata Willd.
occasional

Along old road-bed across Snow Creek

3 02 Stellaria media (L.) Cyrill.
common

1 03 Asplenium platyneuron (L.) Oakes
rare

2 04 Carpinus caroliniana
occasional

3 05 Cardamine
common

2 06 Cardamine
common

Spotsylvania Co.

flowers white, petioles and under leaf-surfaces purplish.

~ small tree

many-stemmed shrub 3 m. tall; catkins pendent, female buds reddish.

prostrate, forming ~~small~~ small mats

small tree 5 m. tall.

~~flowers~~ plant green petals white.

plant purplish; petals white.

March 17 - Honolulu -
Kona weather, but no rain. A very conspicuous bluish haze cuts down visibility - said to result from eruption on Hawaii which is said to have ceased day before yesterday.

March 18 - Air trip Honolulu to Hilo - The same haze as yesterday. The haze is very dense, scarcely any visibility of islands on way. The haze, a gray-blue to gray-brown color from above, depending on distance, has a very sharply defined upper limit, as though by a temperature inversion. Some clouds protrude above this layer. The ceiling of the haze must be ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~ at about 5000'-6000' because just the tops of East Molokai and West Maui tops ~~[illegible]~~ extend above it. Below this the outlines of the slopes can be dimly perceived. From closer up, details can be

seen, but all rather obscured by haze. Around coast south of Lahaina one or two of the smaller of the fan-slopes are still uncultivated. These should be looked at. ~~[illegible]~~ The top third of Haleakala protrude above the haze and is very clear. (photographed.)
Row of cones down the s.w. ridge, with faults, or at least parallel ridges. Auwahi forest has green grass, scattered trees, at least in upper parts. The row of cones runs from top to bottom. The entire south side does not appear nearly as dry as usual.

Hilo - near airport
Macaranga "macrophylla" seems completely naturalized in thickets. Ageratum cf. houstonianum abundant in vacant lots toward town.
Wedelia trilobata - ground cover planted around shopping center - very luxuriant.
(in Oahu - in Lamoureux garden 2 sprigs planted 2 years ago now a patch 10 m. across.)

1965 Hawaiian Is.

Road from Hilo to Kilauea m.p. 23.5 Polygonum sp. + Fragaria vesca along road.
Fragaria has nodding white fruit.

H.N.P. road to Kilauea Iki + Chain of Craters Rd.
Pitoma leaves are a bright orange - probably sprayed. - no. from sulfur fumes in last week.
S. of Aloi Crater is a new patch of dead Metrosideros.

Makaopuhi - a crescent of red advanced across the lake in a few minutes. A little sulfur fume, apparently because of drain-back.
Radiant heat sufficient so that a patch of dried vegetation - open to closed scrub or thicket - burst into flame and burned off. Powers pointed out a number of other places on walls where same took place earlier.
Many leaves etc. blowing up out of crater in convection currents. Heat and noise perceptible.

There has been a drain-back of 40-50 since maximum height. A small fan came out on opposite side of balcony the first day.
Vegetation around upper rim dried and dark brown.
Fire from burning patch caught up on rim of balcony. Did not burn vigorously. Just smoked.

A strip of dead vegetation up almost to rim back of the little flow on the balcony.

Practically all the rest of wall above balcony still green. Balcony floor green but apparently somewhat dry. All the remaining crater wall has forest dead or burned off.

Grass around parking loop is brown but not entirely dead. Nephrolepis brown except at base. Gleichenia little affected. Trees scarcely affected.

Along beginning of Napau trail Sadleria

fronds brown. Eupatorium apparently dead. Pluchea odorata tips dead but stems putting forth sprouts.

Effects lessen very rapidly after 150 m!

Peles Hair abundant on trail (photos - kod) some spatter pumice.

Along trail the condition of the Eupatorium varies with degree of exposure to crater — sheltered patches not much affected. Vaccinium calycinum apparently hurt some. Lycopodium cernuum not much affected here.

Spatter pumice hanging on plants. One piece penetrated a Gouldia leaf, singeing edges of hole (photos b+w)

This spatter became locally more abundant on trail toward ~~below~~ end of crater.

This only very locally strong.

Even on banks well sheltered the Hypericum japonicum has been

killed back completely. A few new green sprigs down in the mats.

In lehua forest a great amount of fallen leaves even though trees still green.

Locally a great deal of spatter.

Many leaflets of Cheirodendron trigynum fallen and yellow, but some still on trees and green.

In tall lehua forest epiphytes, incl. Polypodium tamariscinum, Elaphoglossum hirtum, and large liverworts are dead or appear so. Elaphoglossum reticulatum browned but not dead. Polypodium pellucidum not affected. Lycopodium cernuum bleached out some at tips, prob. not badly affected.

As forest opens up and gets smaller the effect on Lycopodium becomes more marked. Here the Lycopodium and Gleichenia are variably co-dominant. The Gleichenia shows no effects. The Lycopodium is almost all bleached.

The crowns are very thin and grayish, many leaves on ground.

Becomes browner and browner along trail.

In open scrub area trees are very much damaged. Machaerina, locally dominant in intervals bet. trees is browned somewhat. Lycopodium appears dead. Gleichenia rather badly affected locally. Vaccinium cal. all red-brown, stems still green inside but very brittle.

This damage becomes less as we go away from Makaopuhi, and especially when back in taller forest.

Pulu factory

Cibotium fronds brown.

Below Pulu factory the small lehua are very thin & grayish, Lycopodium

mostly bleached out or brown, but Gleichenia still healthy. Sadleria fronds brown.

This dwarf forest becomes grayer and ~~[illegible]~~ less leafy toward Napau, prob. effects of both eruptions. Locally ~~[illegible]~~ almost leafless.

In open area with a few steam cracks some current damage to young Gleichenia fronds. Much spatter pumice on ground. Almost no Lycopodium and the few plants seen bleached.

Tall forest just above Napau - canopy very thin, much litter on ground. All Cibotium fronds completely brown, except some rachises. Epiphytic mosses and hepatics dead. Nephrolepis fronds at least dead, Elaphoglossum reticulatum brown with a little green along midribs and on petioles.

Gleichenia is here
somewhat browned
Isachne also. Coprosma
menziesii (?) with most
leaves dead or partly dead.
Much pumice, some
globs as big ~~as~~ double
closed fist.
Near crater edge
almost everything
in undergrowth
brown —
Eupatorium – brown
Isachne – partly
Gleichenia – partly
Cibotium brown
Vaccinium cal. brown
Machaerina green
Cyperus polyanthos
green in bases
of tufts.
Hypericum jap. – brown

Gouldia little affected
Coprosma somewhat
Broussaisia somewhat –
Cheirodendron somewhat.
Epiphytes except
Elaphoglossum sp.
and Peperomia seem
not to have recovered
from 1963 eruptions.
Both fume effects on
spatter become less

---

rather rapidly toward
ravine from trail.
Cibotium mostly
green.
Vegetation in ravine
affected but not strongly.
More so on steep slope
to crater floor. Cibotium
somewhat brown here.

The crater floor
is one slightly undu-
lating lava lake,
with polygonal cracks
3-5 m apart, a few
humps with a tree
mold or two. No kipukas
left at all.
Surface a pahoehoe
with a shreddy-flaky
surface, very iridescent.
The surface has been
about 5 m or 4 m. higher
than now, and dead tree
trunks are fallen over this.
Above this the ~~ol~~ trees
on slopes and cliffs
to top or almost so
appear dead. This true
all around. In two
places lava apparently
flowed over cliffs.
These at two intersections
of rift with rim.

photos

heat coming from cracks. Fumes from some peripheral areas; not much in center.

Most of undergrowth on basal slopes of cliffs, above actually burned area, is brown, but probably from heat rather than fumes, as there seems little differential effect. Occasional small patches, sheltered stems and fronds, etc. green. Epiphytic and epilithic moss and liverwort dead.

Up on flat again a tall species of Wikstroemia with prominent rings of corky lenticels seems more defoliated than most other shrubs under conditions of moderate damage by fumes.

photo View across Napau from end of trail (Kod.) showing band of dead trees on cliff and lava cascade on rift intersection.

In this forest ~~to~~ Coprosma menziesii shows more effects than other shrubs, but only partial killing of leaves. The most conspicuous effects are browning of Cibotium fronds, killing of epiphytes, thinning of lehua canopy, partial yellowing of Isachne leaves, browning of Vaccinium calycinum, browning of Lycopodium. Partial browning of Elaphoglossum reticulatum. Partial yellowing of Cheirodendron lfts.

North from trail just back of rim the layer of spatter pumice becomes thicker and thicker, and the vegetation more and more dead - probably as much from heat as fumes. In places everything is brown except tops of lehua trees. Even these are in bad shape.

The Gleichenia is a reddish brown color except a few sheltered fronds which are still green.

Most everything dead in steaming area back from edges.

Flow area a forest of buried trees mostly like giants clubs. (photos B&W & Kod)

Flow has many thin walled tubes and bubbles - pahoehoe. Many burned off tree trunks lying on surface.

Makaopuhi Crater - at about 6:15 p.m., something like 5 hours after the observations made on p. 45, fire had spread on the balcony, and a line of fire had advanced over about 1/4 of the area, burning the grass but apparently not seriously affecting the trees. About 10 p.m. a small segment of this was still burning!

1965 Hawaiian Is.

Labels typed 46007-46073

Mar. 18 - Volcano Rd. 23.5 mile above Hilo on roadside in wet forest area — 2500' 760 m

46007 Polygonum capitatum Ham. ex D. Don
3 common

2 08 Fragaria vesca ~~var.~~ f. alba (Ehrh.) Rydb.
common

Mar. 18 Chain of Craters, ~~Rd.~~ ~~Makaopuhi~~ Napau Trail, Makaopuhi crater — 2750' 840 m

with M.S. Doty
4 09 Fragaria vesca ~~var.~~ f. alba (Ehrh.) Rydb.
colony along trail

Mar. 18 Chain of Craters above Napau Crater, near Puhi 7 [illegible] — 2900' 885 m

3 10 Coprosma
occasional in open scrub forest of Metrosideros

2 11 Gouldia terminalis m.
rare in Metrosideros forest

Mar. 18 Chain of Craters, Napau Crater — 2750' 840 m

3 12 Peperomia
common, epiphytic on tree trunks in Metrosideros forest

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plants prostrate, heads of flowers pink.

petals white; fruit white, nodding.
(living plants sent to Darrow)

fruit white, nodding.

shrub 2 m. tall; fruits orange, globose (not beaked).

shrub 2 m. tall.
flowers purple outside green within

plant fleshy.

1965

Mar. 19 - New road -
From beginning at Makaopuhi
Semi-open & closed lehua
forest with slight admixture
of Santalum and various
shrubs few or no
95.9 mi. a patch of dead
trees.
Just below this very open
forest with old trees, many
dead. Mixture of sparse
scrub and Andropogon between.
Then, 96.5 mi, forest gets
smaller denser. Then along
96.8' open grassland with
scattered trees, many dead.
97.2 Then open scrub with
Andropogon - scrub is
of Dodonaea, Wikstroemia,
Canthium - quite green.
At top of cliff
97.6 Open mixed sclerophyll forest
fading to open lehua forest-
98.0 sec. mixture with other
things. Canthium undergrowth
at Naulu Picnic Rd.
Some Aleurites, Psychotria,
Bobea Diospyros, Antidesma.
Then mosaic of scrub
+ open Metrosideros forest.
Loop in rd. doubles back
across same flow
below cliff. Good patches
of kukui and other things

in steep slope between
rds.
Then open pahoehoe, a few trees
300.7 Breadfruit & 1 coconut.
Then aa with scattered
Metrosideros, nothing
on ground.
Pahoehoe with scattered
very poor Lantana.
Tricholaena with
~~[illegible]~~ open lantana scrub.
301.5 on flat lowland.
Patches of Nephrolepis.
Pluchea odorata.
302.9 Beginning very widely
scattered
303.0 Flats of pahoehoe
One ~~[illegible]~~ Rauwolfia tree.
Lantana
Cassia leschenaultiana
Waltheria
Tricholaena
Pluchea odorata
Metrosideros
Emilia ~~javanica~~ ~~sonchifolia~~
Morinda citrifolia
Nephrolepis
appr. coast
Heteropogon becomes common
or even dominant, in cracks
of pahoehoe. Pluchea
~~still~~ common.
Pahoehoe for long distance
along coast.

going eastward the vegetation becomes more and more abundant. Even some stunted guava. Heteropogon abundant. Asclepias curassavica (rare)

368.9 By here the vegetation has become a continuous sparse to open scrub with grass between it. A small patch of low trees near Kamoamoa. A tiny coconut grove nearer the sea.

Road now very near sea. Depressed sparse to open scrub on pahoehoe. Then open to almost closed scrub.

Psidium
Wikstroemia
Canthium
Metrosideros,

311.4 Coconut grove and tall open to closed scrub.
Cassytha.

Mar. 19 Puna – 1955 flows gray with Stereocaulon vulcani.

Max Doty's Kamaili study plot II on 1955 flow near vent. Stereocaulon abundant. Nephrolepis to 2 dm. tall, mostly smaller, in all crevices. A few Arundina and Spathoglottis, both have produced fls. Seedling Metrosideros up to 3 dm. A few tufts of Andropogon, 1 Melinis. Campylopus here and there esp. in crevices. One tuft of Polypodium thunbergii under overhanging edge of broken bubble.

Polypodium scolopendria in sheltered cracks, sporelings once lobed.
Pluchea seedlings – rosettes.

A few spots bare of lichen. These seem hot.

Small pit "lipuhia". Choked with Nephrolepis. A little Commelina diffusa. Several Pluchea odorata bushes. 1 Erechtites plant. A few Eupatorium riparium. 1 bush Stachytarpheta.

The Stereocaulon reaches a maximum of about 2 cm length, abundantly fruiting.

Melastoma has come into the vicinity in abundance.

Hale Kamahina, 7 mi. s Kapoho.
Hed. corymbosum on bulldozed 1955 aa lava.

Kapoho – orchid patches. Extensive papaya fields

Doty plot, xii, 58, near Kapoho Crater, on broken aa. No evident vegetation except traces of Stereocaulon and protonema and sparse dwarfed shoots of Calymperes sp. on a few rocks. Under overhangs here and there a few small ferns –
Nephrolepis
Polypodium scolopendria.
Many of boulders have very ~~sparse~~ small Stereocaulon prothallia.

Kauelau Flow 1955 ~~flow~~, where it enters sea has been cut back about 200' by sea.

Ke'e Ke'e 1955 flow, is immediately adjacent to prehistoric aa, across which a remnant of the ancient Puna trail, marked by rounded boulders at 1-2 ft. intervals.
The only difference in vegetation that is evident is a speckling of tiny white spots of Stereocaulon. Surface of lava apparently identical.

Kehena Beach – black sand beach in cove, being developed. Wedelia trilobata planted, along with other exotics.

Phyllanthus urinaria ; common on aa 0.7 mi. n of Kaimu B.

350.9 - 1.6 (Pst.) Kaimu

At Kalapana Park Spermacoce common. Ponds filled with Eichhornia. Some Cyperus. Dunes grassy.

Park Boundary – 356.1 mi.
Mixed open scrub
guava, Schinus, Wikstroemia
Metrosideros.
After patch of small trees stature lower & lower.
358.4 shrubs are prostrate and become sparse, on pahoehoe.
Lantana, guava, Canthium Wikstroemia.

a bit back from shore

359.4 a low cliff with a few trees. Aleurites etc. Pahoehoe with tumuli. Pluchea becomes common and veg. is irregularly and closely spaced grass and low Pluchea. Becomes generally grassy with Heteropogon with a few scattered Metrosideros. bare lava on tops of tumuli and folds. (a) Heteropogon

r	Osteomeles
c	Waltheria
lc	Nephrolepis
c	Pluchea
o	Dodonaea
r	Psilotum
c	Lantana
c	Psidium
r	Spathoglottis
o	Chrysopogon
r	Styphelia

These obs. from car. Vegetation evident.

362.4 bare pahoehoe with some Heteropogon. Portulaca in shallow depressions Cassia leschenaultiana.

363.9 "Pull out" Pahoehoe. ash filled depressions in pahoehoe are well vegetated.

c-a	Portulaca cyanosperma		r
a	Desmodium triflorum	*	c la
c	Waltheria indica	*	c
c-a	Chrysopogon aciculatum	*	c
c	Fimbristylis cymosa	*	a
c	Vernonia cinerea	*	o
o	Lantana camara	*	o
o	Passiflora foetida	*	o
l	Eragrostis amabilis		
o	Digitaria violacea		
la	Heteropogon contortum	*	la
o	Pluchea odorata	*	o-c
o	Emilia javanica	*	o
l	Sporobolus diander		
	Nephrolepis	**	c la
o	Cassia leschenaultiana	*	lo
	Spathoglottis plicata	*	r

Toward the sea almost everything drops out except Fimbristylis, which becomes abundant or at least very common esp. in crevices.

	Cyperus javanicus	*	r.
l	Bulbostylis capillacea		
lc	Fimbristylis sp.	*	r.
r	Euphorbia thymifolia		
l.	Euphorbia hirta	*	r
	Psilotum nudum	*	r.
	Dodonaea viscosa	*	lo

lc	Cenchrus echinatus, hillebrandii
lc	Dactyloctenium aegyptium
lc	Oxalis corniculata

1965 Hawaiian Is.

On beach beyond
on coral sand acc. tomentosa
Vigna marina
Scaevola taccada
Tournefortia argentea
Sesuvium portulacastrum
(green) (pink fls.)

March 19 - west of the Sea Arch,
about 1 mi. e. of Kaena Point.
Pauau
on almost bare pahoehoe lava

46013 Portulaca
3 common in ash-filled depressions

3 14 Psilotum nudum (L.) Beauv.
rare in deep crevices

4 15 Fimbristylis cymosa
abundant in crevices,
especially near sea

3 16 Passiflora foetida var.
occasional~~ly~~ in crevice and depressions

1 17 Dodonaea viscosa
rare in crevices

1 18 Bulbostylis capillaris
rare in ash in depressions

1 19 Euphorbia thymifolia
very rare, one plant seen.

2 20 Vernonia cinerea var. parviflora
occasional

4 21 Fimbristylis
common in ash-filled depressions

3 22 Waltheria indica var. americana
very common generally

Hawaii

10 m.

prostrate, leaves fleshy,
appressed to stems, dull purple;
root tuberous.

erect, tips yellow.
dense tufts.

creeper, fruits green, hirsute;
bracts appearing interlaced.
small sterile shrub

heads purple.

small erect tufts

prostrate (some seen with
stems ascending, mostly prostrate),
flowers yellow.

1965 Hawaiian Is.

Mar. 19, - John K. Brown Park,
Kalapana

46023 Spermacoce cf. suffruticosa
3 common in trampled area
in park

~~4 Phyllanthus urinaria~~

Mar. 19 - south coast
0.7 miles east of Kaimu Bay

4 24 Phyllanthus urinaria
very common on aa lava

Mar. 19 - Hale Kamehina,
1.5 mi. south of Kapoho Crater

1 25 Hedyotis corymbosa
uncommon on rolled ash
surface on aa lava

Mar. 19 - Kamaili, near head
of 1955 lava flow

4 26 Stachytarpheta dichotoma (R. & P.) Vahl ~~cf. jamaicensis~~
rare in ~~[illegible]~~ small pit in lava

---

2 m

depressed wiry plants.

6 m.

erect

50'
15 m prostrate; flowers white.

1500'
460 m

large bushy plant,
flowers light violet
spikes almost black.

1965 Hawaiian Is.

Mar. 19 – ½ mile south of
Naulu, Kealamomo
at base of low
cliff on pahoehoe lava

46027 Pluchea odorata (L.) Cass.
4 occasional

4 28 Rauwolfia sandwicensis
rare, one tree

2 29 Emilia javanica (Burm.f.) Rob.

Mar. 19 – Naulu Forest
Kealamomo
in open forest on aa lava flow

4 30 Myoporum sandwicense
occasional

3 31 !Myrsine lessertiana
occasional

2 32 Polypodium thunbergianum
occasional on lava boulders

3 33 Antidesma pulvinata
rare

6 34 Bobea timonioides
rare

4 35 Psychotria hawaiiensis
occasional

4 36 Myrsine lessertiana
occasional

3 37 Nephrolepis multiflora (Roxb.) Jarrett
common

6 38 Diospyros ferrea var. sandwicensis
common

3 39 Canthium odoratum
common, ~~a~~ seedlings making under-

3 40 Asplenium cf contiguum
occasional on lava in shade

Hawaii – Hawaii Volcanoes
Nat. Park.

255'
60 m

shrub 1 m tall. aromatic.

partly dead tree 4-5 m. tall,
with thick corky bark,
flowers greenish white.

~~1500'~~ plant purplish, flowers red.

1500'
460 m

small tree, flowers pink,
fruit fleshy. pinkish white.

small tree, fruit green.

small sterile tree,
leaves dark green above.

small tree, 4 m. tall,

small tree, flowers
dull white, glabrous within.

small tree, fruits green

det. 1976 Jarrett, fronds erect.

rounded tree, 10 m. tall,
fruits deep red when ripe.

slender tree 3 m. tall (others much
growths taller) fruit green.

~~#6~~ 1965 Hawaiian Is

4604 1 Doryopteris decora var. decipiens (Hook.) Tryon,
1 occasional on lava boulder

3 42 Oxalis corniculata
occasional on ash soil

Mar. 20 – Kilauea Iki Crater
~~in~~ growing in cracks
in 1959 lava on crater floor

1 43 Nephrolepis multiflora (Roxb.) Jarrett
commonest plant,

1 44 Metrosideros collina
occasional

1 45 Hedyotis centranthoides ?
rare

1 46 Sadleria cyatheoides
occasional

1 47 Pityrogramma calomelanos
~~occ~~ occasional

1 48 Polypodium pellucidum
occasional

same, on moist wooded part of
east wall of crater,
~~moist forest~~

2 49 Labordia
rare

7 50 Fragaria vesca ~~var.~~ f. alba (Ehrh.) Rydb.
very common

to p. 82.

Hawaii Haw. Vol.
N.P.

creeping with erect stems.
flowers small, yellow,
fruit unusually short.

3475'
1060 m

det 1976 Jarrett

fronds erect.

large plants with
fronds golden beneath.

3500'
1070 m

small shrub, corollas
orange in bud, fruit whitish,
strongly compressed,
thin margined.

inflorescence erect, fruits
nodding, fleshy, white,
achenes, when well developed,
somewhat sunken in pits or
almost superficial.

March 20 – Kilauea Iki Crater

On trail down Anemone is very common. Fragaria vesca, also.

Around lava lake at bottom Pipturus forms a border.

A few plants have come in on the edges of the lake, on the terrace that represents the highest lava level.

Setaria geniculata
Lythrum Emilia sp.
Metrosideros Conyza sp.
Nephrolepis
Erechtites valerianaefolia

In shaded places around bottom of trail on new lava Stereocaulon is well established but plants still very short

Crevices lower down
Metrosideros
Nephrolepis
Isachne
Pluchea odorata
Lythrum (dead)
Polypodium pellucidum
Sadleria cyatheoides

Nephrolepis is most abundant, but where cracks are shallow it is

somewhat dried up.

Row A of meter square plots across crater floor.
#A has some Nephrolepis in a crack. #B nothing.

photos kc & bw

Lower slopes of crater wall where trees were burned off now dominated by Nephrolepis, with considerable Andropogon.

photos kc & bw

Nephrolepis very common in cracks out in crater floor. A few Sadleria
Pityrogramma
sulph.
Metrosideros
Polypodium pellucidum

Gradual attenuation out of establishment of plants from east wall of crater.

At base of west wall ± half way e-w there are only a few tiny Nephrolepis plants in crevices on broken lava slope below terrace. One crack 10–20 m out from base of slope has several and one farther one tiny sporeling.

Farther west some Nephrolepis a few inches tall on lowest escarpment and steep slope immediately below it, esp under overhangs. One Polypodium pell. (small, under overhang)

No plants at all in cracks on floor in west half: except in a crack on a ridge of a large tumulus near ~~[illegible]~~ west end are some rather large Nephrolepis. Tiny ones in other cracks on same tumulus.

A few Nephrolepis + 1 Pityrogramma ~~[illegible]~~ in cracks on n. side of another adjacent large tumulus. A few sporelings in cracks near top of this.

A few Nephrolepis in cracks near w. base of n. mesa near lower end

Some in cracks in another tumulus w of n. mesa. Some fairly large Nephrolepis and Polypodium in narrow s. facing crack on this.

Then across crater to east the Nephrolepis goes up to a very sharp horizontal line, then stops. (Kod. photo)

A few Nephrolepis in cracks on e side of n. mesa.

A few sporelings on ~~[illegible]~~ broken surfaces on side of s. mesa also on east side.

One Nephrolepis + 1 sporeling deep in a crack in floor just e. of s. mesa.

On lower scarp of second terrace on ~~s~~ side near w end. Sporelings and small plants of Nephrolepis (1 Polypodium pellucidum). on vertical broken faces. Also in very large crevasse on the top of this terrace. Nothing in cracks on terrace nor visible from short distance on scarp of upper terrace.

1 Nephrolepis in crack on lower slope. Many tiny ones on vertical broken surfaces. These surfaces face north. True generally along south half of this scarp. Both Nephrolepis + Polypodium but many more of former.

No plants in cracks in floor out from this slope west of ~~about~~ the middle of s. side.

Eastward a few Nephro. in cracks near base of steeper slope, a few in cracks on slope.

Same mixture of Nephrolepis and Polypodium, continues eastward along scarp and in crevices. One live Sadleria and many dead ones, one dead Pityrogramma, a number of Hedyotis centranthoides plants that have fruited, some young ones, several Dubautia scabra that have fruited, one tiny grass or sedge seedling, one Pluchea odorata seedling, all in crevices on lower slope below scarp.

many nephrolepis

Eastward on floor almost nothing in cracks. Near east end one Nephrolepis + one tiny Hedyotis in crack 15-20 m. out from slope. Here perhaps 200 m. from e. end nephrolepis is in cracks well out into floor.

Nephrolepis many feet down in crevasse 3-4 dm wide near bottom of trail on lower slope.

The entire crater floor is pahoehoe with an iridescent loose flaky surface, with polygonal cracks. many of these filled with flakes - these with very few plants. The deep clean cracks with more.

Mar. 20 - Puhimau Crater

~~possible~~ #1 - many dead twigs, leaves dull, mottled, rather sparse.

#3 Only a few living twigs left, tree mostly dead, a few lateral twigs these look healthy, but the leaves on still living twigs in the upper branches very spotted some pale young growth, 3-4 cm.

#5 dense, healthy looking except a few terminal twigs.

#4 quite many dead twigs, foliage somewhat thin, much young growth, a few flowers.

#2 - tree about 1/3 - 1/4 dead, but living part looks healthy.

#7 top dead, most terminal parts of branches dead. Old leaves mottled, ~~Even~~ most twigs have 4-8 cm new growth, some of this mottled.

#8 Healthy looking,
a few dead small twigs.
flowering.

#9 completely dead.

#10 looks healthy,
dense crop of fruit, 2
generations, 2 large
basal sprouts dead,
another with leaves on
terminal twigs but
these very reddish.
Abundant young
growth 3-5 cm. long on
most parts of tree. 3 or 4
flower clusters.

6 Fairly healthy,
some fairly large twigs
dead, many small ones
up to 10-15 cm. young
growth on many twigs
This badly galled.

Looking back along
road from opposite #,
almost all the trees
~~#~~ in field of vision within
300 m. are dead. all but one
of larger ones. Dead patch
on both sides of road.

Hot spot across road
from and below Puhimau
Open bare ground with
scattered bunches of Andropogon.
Thin patches of Fimbristylis
sp. some Portulaca sclerocarpa
& Waltheria
rolls of moss
some scattered Nephrolepis.
Stumps of Metrosideros
some with a few sprouts.
Stumps are cut.

Surrounded by a belt
of andropogon.
Then a belt of Nephrolepis
Then a belt of Gleichenia
and scattered Metrosideros
Then open Metrosideros
with bare ground and on
shrubs with Cladonia.
shrubs Styphelia, Dodonaea
Metrosideros, Dubautia
also here Cyperus polyantha
Andropogon Gahnia gaudi-
chaudii, ~~[illegible]~~ Polypodium
pellucidum Machaerina
angustifolia Pteridium
Bulbostylis + Cladonia
Conyza canadensis

This is old Pahoehoe
covered by lapilli

1965 Hawaiian Is.

ctd. from p. 72

~~46051~~ same – on 1959 lava slope just above crater floor.

46051 Hedyotis centranthoides
1 occasional in crevices

1 52 Dubautia
occasional in crevices and under overhanging ledges.

Mar. 20 – Thurston Lava Tube Kilauea

2 53 Viola odorata L.
well established patches in Metrosideros – Cibotium forest.

Mar. 20 – Kilauea Caldera floor near Halemaumau Parking area.

7 54 Lindernia crustacea (L.) F. Muell.
abundant ~~[illegible]~~ in fumarole area, even where exposed to very warm steam.

2 55 Fimbristylis dichotoma var.
~~at~~ common in fumarole area

1 56 Euphorbia thymifolia L.
occasional in fumarole area

Mar. 20 – Steaming area between Puhimau and Kokoolau Craters, s.w. side of Chain of Craters Road in open area of fumaroles, formerly Metrosideros forest.

Hawaii Haw. Volcanoes Nat. Park.

34580
1055 m plant rather purplish, leaves stiff, coriaceous.

4000'
1220 m

spreading by creeping rhizomes.

3950'
1205 m

flowers purple.

culms prostrate.

prostrate, purplish.

3600'
1100 m

46057 Waltheria indica
4 common
1 58 Pteris
rare
~~59 Sticta?~~
~~growing on~~
5 59 Portulaca sclerocarpa
locally common

4 60 Fimbristylis dichotoma var.
~~locally~~ abundant

same – in open Metrosideros forest
1 61 Sticta? given to Mason Hale May '68
growing around basal 15 cm. of small Dodonaea shrub

Mar. 20 – Puhimau Crater
1 62
protruding between flakes of bark of trunk of Metrosideros in area where most trees are dead.

1100m

plant depressed, fleshy, root crown very thick, almost globular; calyx deep carmine red; leaves sub-terete, rather appressed.
culms prostrate.

3600'
1100 m

1965 Hawaiian Is.

Eddy ~~[illegible]~~ English says that the logging of the place below Puhimau took place during Oberhansley's regime. He did not approve of cutting anything, so when he was away on the mainland, his assistant cut the trees which had already been killed by the heat. Chester says this place was first noticed as steaming in 1938.

Polygonum along Volcano Rd. brought from N.Z. by Alexander Porter as an ornamental.

Willy Laiki – Schinus Terebinthifolius, brought to Hawaii by Willy Wright.

Hawaii Haw. Vol. N.P.

1965 Hawaiian Is.

March 24 - Kilauea, Park
Residential area
planted around houses

46063 Rhododendron cf. indicum Sweet cv?
4

4 64 Rhododendron "

March 24 - Kilauea,
top of north rim of Caldera
planted in ~~[illegible]~~ Wentworth
garden in moist porous volcanic ash soil.

2 65 Buddleia davidi Franch.

4 66 Rhododendron cf. indicum Sweet cv?

4 67 Cupressus

3 68 (solan.)

3 69 Rhododendron cf. indicum Sweet cv?

4000'
1220 m

bush 1 m. tall, flowers white.
— bush 1.5 m. tall, ~~[illegible]~~ corollas bright rose-purple, ~~upper~~ 2 ~~lobes~~ ~~[illegible]~~ spotted with red.

4050'
1235 m

Tall sparsely branching shrub 3 m. tall, flowers dry.
— shrub 1.5 m. tall ~~[illegible]~~ corolla bright rose-purple, upper 2 lobes spotted with red.
— tall narrowly conical tree, twigs arranged in one plane but ultimate branchlets not much or at all flattened.
— scrambling shrub climbing on balustrade, 4 m. tall, corollas vermillion within orange without, orange-yellow when young.
— bush 1.2 m. tall, corollas dull scarlet, ~~[illegible]~~ upper ~~[illegible]~~ lobe and parts of next two spotted with deeper red.

1965 Hawaiian Is.

46070 Fuchsia?

2

3 71 Rhododendron cf. indicum Sweet cv?

March 27 – Honolulu, School St. and Kalihi

3 72

weed along sidewalk

March 28 – Honolulu, Piikoi St. below Wilder Ave.

3 73

weed along sidewalk in lawn

Plants collected by J. O. Wentworth, see p. 126

Hawaii Haw. Vol. N. P.

1235 m shrub 1 m. tall, inflorescence and flowers crimson-magenta

— shrub 1.5 m. tall; corollas white, slightly flushed with pink outside, upper lobe and parts of next two spotted with crimson.

30' 25 m Oahu

depressed, wiry, mat-forming, heads with 4 short yellow rays.

75' 23 m

prostrate, mat-forming, heads with 4 short yellow rays.

Labels typed 46074 46095

1965 California

April 1 – Mapes Ranch, Maze Road 1 mi. e. of San Joaquin River
alkaline area in heavily grazed pasture

46074 (comp.)
1 very local
2 75 Juncus
locally common on bare soil
2 76 Hordeum murinum ?
common
2 77 Hemizonia
common locally
1 78 Frankenia californica
common locally
1 79 Spergularia
very local
1 80 Lepidium
locally common
1 81 Plagiobothrys
rare or inconspicuous
1 82 Eryngium
very rare
2 83 Psilocarphus
locally common
1 84 Plantago coronopus
locally common
2 85 Lepidium
locally common
1 86 Baeria
abundant locally, especially in depressions
1 87 Bromus mollis
generally common

Stanislaus Co.

buds pendent

rays yellow

sterile

Pods reddish green, most plants with pods dehisced.

prostrate

heads bright deep yellow.

Labels typed

1965 California

46098 Deschampsia
2
locally common

1 89 Stellaria?
very local

1 90 Senecio vulgaris?
locally common

1 91 Spergularia
very rare

3 92 Plagiobothrys?
locally common

1 93 Hordeum murinum
very local, on ant-hills.

1 94 Atriplex
very rare

1 95 Lepidium
very local

Stanislaus Co.

culms depressed to
ascending; spikelet
dark brownish green.

— prostrate

disk dull yellow.

~~fl~~ petals pinkish white.

prostrate; corollas
very small, white.

plant prostrate,
gray.

— plant green.

1965 Virginia

Labels typed 46096-97

May 9 - Sleepy Hollow
in wooded dwelling yard

46096 Viola canadensis L.
1 occasional in deciduous woods
(possibly introduced
with transplanted wild plants).

1 97 Viola cucullata Ait. ?
occasional in deciduous
woods
(possibly introduced
with transplanted
wild plants)

Fairfax Co.

several stems spreading
and ascending from
base, flowers white,
not purple on back of
petals, lower petal marked
with purple, glabrous,
lateral petals scarcely
marked, strongly
bearded at base.

leaves completely glabrous,
flowers ~~deep~~ rather
deep purple, white
marked with purple
in center, lower petal
thinly and shortly
pubescent within with
slightly clavate hairs,
lateral ones strongly
bearded at base with
slightly clavate hairs.

1965 Maryland – N.J.

May 10 – Air trip Wash. – ~~N.Y.~~ Newark

Area around Beltsville & Research Center & beyond has substantial closed broad-leaf forest areas, bright green at this season, with conspicuous inclusions of pine forest, these mostly with sharp boundaries and angular in outline.

Area bet. Philadelphia and Newark almost 100% cultivated. In the few sparsely wooded areas the Cornus florida shows up very conspicuously, in some areas almost complete coverage.

1965 Virginia

April 16 – Alexander Berger Sanctuary

Main wooded tract –

Low woods on side toward Belvedere Farm, road to old fort.

Mixed forest of

√c Quercus phellos
o Q. falcata
c Liquidambar styraciflua
o Fagus grandiflora
c Nyssa sylvatica
c Acer rubrum
lc o Pinus virginiana
c Liriodendron tulipiferum
o Quercus alba
c Juniperus virginiana
~~Betula~~
√ a Quercus palustris
o Vaccinium stamineum
la Clethra alnifolia
o Cornus florida
lo Viburnum prunifolium
c Viburnum
X lo Aralia spinosa
o Ilex opaca
o Vaccinium cf. atrococcum (or corymbosum)
o Leucothoe racemosa
c Rhus toxicodendron
c Parthenocissus quinquefolia
~~Osmunda regalis~~
l Gratiola
a Mitchella repens
la Hedyotis caerulea
la Lycopodium obscurum

Woods on very slightly
higher ground of

Quercus alba
Acer rubrum
Liriodendron
Liquidamba
Nyssa
Ilex opaca
Juniperus

in this in low spots
with Sphagnum
patches of
Osmunda regalis
Osmunda cinnamomea
Vaccinium cf. atrococcum
Leucothoe racemosa
X Galium obtusifolium

1945 Virginia

Across a semicircular old ditch the vegetation changes.

semi-open forest, mostly

a Quercus alba
c Q. coccinea ?(or palustris)
o Q. velutina
c Nyssa
o Carya sp

Ilex opaca
~~dense~~
Open tall shrub layer
la Rhododendron nudiflorum
a Castanea pumila
o Cercis canadensis
c Nyssa
r Vaccinium corymbosum
X r Chionanthus virgini~~a~~cus
c Cornus florida
Low shrub layer
a Gaylussacia baccata
c Vaccinium stamineum
c Vaccinium vacillans

June 9 '65

River Bend Azalea Area
700' alt.
Cercis c ✓Castanea pumila
Kalmia
✓Acer negundo
✓ rubrum
✓Tilia amer.
✓Carya sp. ✓Quercus falcata
✓Carpinus
✓Asimina ✓Populus deltoides seedl.
✓Fraxinus amer.
✓Fagus ✓Juglans nigra
✓Nyssa syl.
✓Ulmus amer. ✓Cercis
✓Celtis occ. ✓Acer saccharinum
✓Cornus florida
✓Platanus ✓Sassafras
✓Quercus alba
✓Quercus rubra
✓Liriodendron ✓Pop. grandident.
✓Robinia ps.

June 9 '65

River Bend Azalea Creek

700' alt.

Cercis – ✓Castanea

Kalmia pumila

✓Acer negundo

✓ rubrum

✓Tilia amer

✓Carya sp. ✓Quercus falcata

✓Carpinus l.

✓Asimina ✓Populus deltoides seed.

✓Fraxinus amer

✓Fagus ✓Juglans nigra

✓Nyssa syl.

✓Ulmus amer ✓Cercis

✓Celtis oc. ✓Acer saccharinum

✓Cornus florida

✓Platanus ✓Sassafras

✓Quercus alba

✓Quercus rubra

✓Liriodendron ✓P. sp. grandident.

✓Robinia ps.

Lindera benz
Hydrangea arb.

Enormous beech
common on slope

grove of Acer
nigrum
v. nigrum

---

carpinus
Tilia americana

Acer nigrum
population sample,
2 sheets each from 8 trees
lower branches.

Azalea Creek runs down a ravine cut to perhaps 30-40 m. depth in the piedmont land in the loop of River Bend, in a fine old growth (probably old second growth) deciduous forest.

In the ravine bottom a great mixture of species. Some tremendously tall Carya. On the slopes some of the finest beech

forest, with
Quercus alba.
Enormous
Fagus trees
Understory of
Cornus florida.
Rich herb layer.
Hedyotis purpurea
abundant in
a fine grove of
Acer nigrum
that shows a
range of variation
from var nigrum
to something near
var. glaucum.

1945 Virginia

Across a semicircular old ditch the vegetation changes.

semi-open forest, mostly
a Quercus alba
c Q. coccinea ?(or palustris)
o Q. velutina
c Nyssa
o Carya sp

Ilex opaca
~~dense~~.
Open tall shrub layer
la Rhododendron nudiflorum
a Castanea pumila
o Cercis canadensis
c Nyssa.
r Vaccinium corymbosum
X r Chimanthus virgini~~ana~~cus
- c Cornus florida
Low shrub layer
a Gaylussacia baccata
c Vaccinium stamineum
- C Vaccinium vacillans

196~~4~~5 Virginia

Labels typed Aug [illegible]

May 16 – Alexander Berger Memorial Sanctuary, Rappahannock River 5 mi. below Fredericksburg in low moist area in large wood about 1 mile from river.

~~46098~~

√4 46098 Carex intumescens Rudge
rare in old road

√2 99 Carex
occasional in old road

√4 100 Lycopodium obscurum L.
locally abundant

√2 461.01 Eleocharis
common in old road

√2 461 02 Viburnum dentatum L.
common in undergrowth

√6 1+5 03 Hedyotis caerulea (L.) Lam.
very common locally

√1 04 Gratiola
very locally abundant in old road

√2 05 Oxalis corniculata var.
occasional

√6 1+5 06 Vaccinium atrococcum (Gray) Heller
occasional

√4 07 Leucothoe racemosa (L.) Gray
occasional

same = moist depression in flat dryish area, white-oak forest

√6 08 Osmunda regalis
locally abundant, forming patches

Spottsylvania Co.

small tuft

small tufts

forming a large patch by underground rhizomes.

slender shrub 2 m tall

flowers pale lavender, tube yellow.
– corollas whitish.

erect; flowers yellow.

shrub 1.3 m. tall,
– fruit very immature.
shrub 1.5 m tall, racemes secund.
corollas white.

fronds erect or almost so.

1965 Virginia

46109 Dioscorea villosa
✓ 2 occasional
✓5 X 10 Galium obtus~~ifolium~~um
very common
✓4 11 Osmunda cinnamomea
common

✓4 12 Ilex opaca L.
occasional
✓ with A.R. Dowling 1 13 Woodwardia virginica (L.) Sm.
very local
✓2 14 Vaccinium corymbosum
occasional
✓2 15 Carex
occasional
✓2 16 Leucothoe racemosa (L.) Gray
occasional
~~E7~~

same - in semi-open
white-oak forest on very
gently sloping ground,
E7 undergrowth ericaceous.
✓5 17 ~~[illegible]~~ Gaylussacia baccata (L.) Wang.
abundant
✓3 18 Vaccinium vacillans
common

✓4 19 Rhododendron nudiflorum
locally common

vine with prostrate
erile at the seas. this season
t erect,
s, slender;
, white.
em erect
n sterile,
to be
them fully

buds

l.
; 8-9 mm. l.

; corollas
e secund.

Agrimonia gryposepala

shrub to 0.5 m. tall,
fls. reddish green.
shrub to 0.3 m. tall,
corollas pale green, tinged
with reddish.
shrub 2 m. tall,
~~or~~ flowers unpleasantly
fragrant, corolla tube
red, limb pale pink.

Agrimonia gryposelpala

[illegible]

44402?

~~P99~~ ⊗ [illegible]

~~P101~~ ⊗

P102 ⊗ chionanthus fringe tree

~~fringe~~

~~4612 0 W~~

[illegible] W

P107? this season

46110 yellow

1965 Virginia

46109 Dioscorea villosa
✓ 2 occasional

√5 X 10 Galium obtus~~ifolium~~um
very common

√4 11 Osmunda cinnamomea
common

√4 12 Ilex opaca L.
occasional

✓ (with P.R. Dowling) 1 13 Woodwardia virginica (L.) Sm.
very local

√2 14 Vaccinium corymbosum
occasional

√2 15 Carex
occasional

√2 16 Leucothoe racemosa (L.) Gray
occasional

~~17~~

same - in semi-open white-oak forest on very gently sloping ground, undergrowth ericaceous.

~~17~~

√5 17 ~~Gayl~~ Gaylussacia baccata (L.) Wang.
abundant

√3 18 Vaccinium vacillans
common

√4 19 Rhododendron nudiflorum
locally common

X vine with prostrate buried rhizome sterile at the seas. this season

X stems weak but erect, rhizomes yellow, slender; corollas 4-parted, white.

fronds erect from erect rhizome, all seen sterile. (some plants seem to be just unfolding, others fully expanded).

shrub 3 m. tall, buds white.

shrub 1.7 m. tall, corollas whitish 8-9 mm. l.

shrub 2 m. tall; corollas white, racemes secund.

shrub to 0.5 m. tall, fls. reddish green.

shrub to 0.3 m. tall, corollas pale green, tinged with reddish.

shrub 2 m. tall, ~~co~~ flowers unpleasantly fragrant, corolla tube red, limb pale pink.

1965 Virginia

46120 Vaccinium stamineum
√6 common
√5 21 Castanea pumila
occasional
√1 22 Hypoxis aurea
rare in bare ground in old road
√3 23 Carex
occasional
√9 3×6 24 Vaccinium atrococcum ?
very local, fair-sized colony.

√2 25 Panicum
very local, on bare
sheet-eroded soil
√3 26 Cornus florida
occasional
√3 27 Vaccinium corymbosum

√3 28 Chionanthus virginicus L.
rare

May 16 Belvedere Peony Farm
Rappahannock River 5 miles
below Fredericksburg
in open pasture
√1 29 Oxalis corniculata var.
occasional
√2 30 Scleranthus annuus L.
common
√2 31 Valerianella olitoria (L.) Poll.
common

Spottsylvania Co.

shrub 0.3-0.7 dm. tall,
flowers white.
shrub 2 m. tall,
buds only.
flowers yellow.

loose tufts, culms
ascending & procumbent.
shrubs 1-2 m. tall;
corollas pale green, broader
than long.
erect

shrub 3 m. tall.

shrub 1.2 m. tall;
corollas white, or
pinkish white, 1 cm. long.
shrub 2.5 m. tall, slender,
flowers white, fragrant.

erect; flowers yellow.

flowers green.

May 30 - Scientists Cliffs
Laurel Preserve
Last year the Kalmia was severely attacked by a lace-bug (one that normally feeds on Rhododendron but is said not to have been at all troublesome on Kalmia before). The last year's leaves are brownish green above and have a messy brown deposit beneath, and hang down. Badly attacked plants produce very few flowers

Labels typed
46132 46134

May 30 - Scientists Cliffs. Chesapeake Bay
46132 Erigeron
√2 common on base of diatomaceous earth cliffs, just above high tide level

May 30 - Battle Creek Cypress Swamp.
in dense forest, partly Taxodium.
√2 33 Itea virginica
rare at edge of tidal channel
√3 34 Callitriche
local in running water just above bridge.

The Kalmia in the area where the tree canopy was removed to stimulate flowering were very severely attacked, and have almost no flowers. They have several short branchlets at the end of each twig, with developing leaves that show no evidence of attack yet.

The plants in the shade, although they have ~~[illegible]~~ been attacked somewhat, are mostly quite normal looking.

The trouble took place ~~in~~ during a severe drought.

stems fistulose,
disk greenish yellow, rays pinkish lavender to white.

shrub 0.6 m. tall,
buds white.
noted, broad leaves floating.

1965 Virginia

Labels typed 46135-189

June 5 - Sleepy Hollow

46135 Selaginella apoda
abundant in localized
patch in semi-shaded lawn.

June 9 - Azalea Creek,
River Bend, ~~[illegible]~~ Potomac River
in deciduous forest
along small stream

4 36 Carpinus carolinianus
common

2 37 Tilia americana
very local

2 38 Acer nigrum

2 39 Acer nigrum

2 40 Acer nigrum

2 41 Acer nigrum

2 42 Acer nigrum

2 43 Acer nigrum

2 44 Acer nigrum

2 45 Acer nigrum

2 46 Acer nigrum

2 47 Acer nigrum

In the loop of the Potomac is a fairly continuous patch of forest, mostly deciduous. It has been selectively logged in some places and is cut with old roads. Parts of it are very old growth, especially a north west slope with great beeches along

---

Fairfax Co.

stems ascending to erect

170-200'

shrub 4 m. tall.

lowest branch of tall tree.

population sample taken from lowest branches of medium sized to small trees.

Azalea Creek. Some of the beeches, and some Carya and oaks ~~[illegible]~~ in the same area are really fine trees. The composition is quite different along the bottom of the Azalea Creek ravine, with Platanus, Carpinus, Ulmus and

1965 Virginia

various other trees and shrubs.

There are several small clearings, the lowest and largest very weedy.

Along the river is a forest of Acer saccharinum, Platanus, Celtis, etc.

In the river are patches of Saururus and Justicia.

Not far up from the river, ~~also~~ on the lowest slope above the flood plain, is a grove of Acer nigrum showing very considerable variation, much of it toward the var. nigrum end, with shallow lobing, yellow-green color, venulose under surface, ~~and~~ hairiness, and stipules. Nos. 46138 to 46147 are a small sample of twigs from lowest branches of these trees. The trees are of all ages, from seedling up

Fairfax Co.

Upper story trees in area
- Fagus grandifolia
- Liriodendron tulipiferum
- Carya sp. (at least one)
- Fraxinus americana
- Quercus falcata
- Quercus rubra
- Quercus alba
- Acer rubrum
- Populus grandidentata
- Robinia pseudo-acacia
- Platanus occidentalis
- Tilia americana
- Nyssa sylvatica (small only seen)
- Ulmus americana
- Acer nigrum
- Acer saccharinum
- Juglans nigra
- Populus deltoides (seedlings only seen)
- Sassafras albidum (seedlings only seen)
- Celtis occidentalis

Understory trees & large shrubs
- Cercis canadensis
- Cornus florida
- Castanea pumila
- Acer negundo
- Kalmia latifolia
- Carpinus caroliniana
- Asimina triloba
- Lindera benzoin
- Hydrangea arborescens
- Viburnum
- Viburnum prunifolium (see p. 117)

herbs seen but not coll.
in small semi-open spot
Galium triflorum
Veronica virginica ?
~~Alternanthera~~ ?
Dioscorea quaternata
Arisaema triphyllum (st. sts.)
Impatiens sp.
Solidago sp.
Eupatorium cf. purpureum
Eupatorium rugosum
Lactuca sp.
Desmodium sp.
Potentilla sp.
Fro Plantago rugelii
In forest (shade)
Fragaria sp.
Carex sp. 3
Polygonum virginianum
Elymus
Sanicula sp.
Podophyllum peltatum
Cimicifuga racemosa
Aster macrophyllus
Ranunculus sp.
Cassia cf. nictitans
Galium obtusifolium
Urtica dioica
In open
Rudbeckia hirta
Achillea millefolium
Erigeron strigosum
Sida paniculata

Shrubs + vines
Parthenocissus quinquefolia var. hairy
Vitis sp.
Corylus (hairy)
Rhus toxicodendron
Rhododendron nudiflorum (slope)
Rhus typhina
Rubus cf. argutus
Rubus occidentalis
Sambucus canadensis

In woods herbs
Cryptotaenia canadensis

1965 Virginia

Edge of river
Saururus ~~ce~~ cernuus
Justicia americana
Apocynum cannabinum?
Boehmeria cylindrica
Laportea canadensis
Lysimachia ciliata
June 13 – Azalea Creek, River Bend, Potomac River
on narrow wooded lower flood plain along river
4 6148 Elymus
4 occasional
3 49 Sanicula
common
1 50 Alliaria
common
3 51 Cryptotaenia canadensis
common
3 52 Osmorhiza
common

same – bank of river, innundated at high water
2 53 Acer saccharinum L.
common
6 54 Rorippa?
very local in shallow depression
3 55 Equisetum arvense
occasional
same – edge of open field on upper flood-plain
2 56 Elymus
common

Fairfax Co.

Large Acer saccharinum
Platanus, Ulmus, etc.
along river.

small tufts, erect,
— spikes somewhat glaucous.
base of plant purple;
— leaves venulose beneath.
— erect; pods terete.

flowers white.

~~leaves~~ tree 15 m. tall
— leaves very glaucous beneath.
— procumbent; flowers bright yellow.

tufts; erect, spikes very glaucous.

1945 Virginia

same – on low wooded slope above flood-plain partly cutover woods of Acer nigrum

6
4/5 157 Festuca obtusa
2 occasional

3 58 Hedyotis purpurea
very common

4 59 Galium circaezans Michx.
very local

2 60 Carex
occasional

1 61 Carex
common on eroded old road bank

1 62 Osmorhiza
occasional

5 63 Scutellaria
locally common

5 64 Athyrium filix-femina f. rubellum

same – in semi-shaded small opening in deciduous forest

2 65 Polystichum acrostichoides
common generally

2 66 Thelypteris
common locally

1 67 Onoclea sensibilis
common

1 68 grass
rare

1 69 Juncus effusus L.
common in damp spots

Fairfax Co.

culms ascending

small tufts, flowers pale lavender.

– flowers pale green; roots yellow, turning reddish on wilting.

tufts

leaves glaucous

tufts, stems erect or almost so.

sterile

1965 Virginia

46170 Carex stipata
1 common in moist places

3 71 grass
common

2 72 Carex
rare

3 73 Thelypteris hexagonoptera
locally common

same:- small opening
in deciduous woods

6 74 Dennstaedtia punctilobula
common locally, forming
patches.

7 75 Viburnum
edge of

2 76 Luzula ~~[illegible]~~ campestris v. bulbifera
occasional

2 77 Danthonia spicata
common

2 78 Juncus tenuis
common, especially
in trampled places

3 79 Panicum
common

2 80 Penstemon
occasional

1 81 Hedyotis purpurea
occasional

2 82 Hedyotis purpurea
occasional in edge of

2 83 Sisyrinchium
rare

1 84 Panicum
rare

Fairfax Co.

culms ascending to
spreading.

fronds erect.

shrub 4 m. tall;
flowers white.

small tufts

culms erect

stems erect; corolla
dull purplish white.
flowers lavender

flowers pale lavender.
roots yellow.
erect tuft

1965 Virginia Fairfax Co.

Labels typed

4	6185	Lysimachia quadrifolia common	flowers yellow
3	86	Panicum common	
1	87	Carex rare	
4	88	Pyrus arbutifolia local	shrub 1.5 m. tall; fruit immature.
5	89	Oenothera tetragona occasional	— flowers bright yellow open during afternoon.

Labels typed pp. 126, 129

1964 – 65 Hawaii

17 Sept. '64 24 – 25 miles Volcano Rd.

(3) Polygonum capitatum Ham. ex D. Don
Patches along roadside

23 Sept '64 mauka of road to golf course,
betw. park boundary & green

(4) Sida

(1) 24 Sept '64 Roadside. Picnic – lookout area
below observatory
Gnaphalium japonicum Thunb.
One small clump seen

25 Sept '64 Road to S. Point 3.5 miles S. of
Belt Rd Junction.

(4)

Vine over old stone wall with trees above

March 3 '65
Slopes of Mauna Loa above Ocean View Estate
near Kau

(4) 1

(4) 2

(2) 3 Coprosma

(2) 4 Luzula

Plants collected by J. O. Wentworth

2750'
840 m
Pink flower

4050'
1235 m

4100 ft
1250 m

1200 ft
365 m
Fl. magenta

2000 – 5000 ft

610 – 1525 m

March 3 '65 Hawaii

Same

(6) 5 Gnaphalium japonicum Thunb.
~~Bensch~~

(1) 6 Gahnia

(1) 7 Cyperus

(1) 8 Vaccinium reticulatum

(1) 9

(2) 10

leave collector blank Violet Hansen

(1) s.n. "Acacia floribunda" (park attendant Johansen)
Mamuka park

collected by Howard A. Powers
March 1965 Puna Beach, road betw.
Kaimu and Opihikao.

(1) x Anacardium occidentale L.
Abandoned house site

J. O. Wentworth

densely branched from base

1750 ft
535 m

3 m